

REPORT BY THE  
AUDITOR GENERAL  
OF CALIFORNIA

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**THE STATE'S SYSTEM FOR PLANNING,  
PROGRAMMING, AND DEVELOPING HIGHWAY  
CONSTRUCTION PROJECTS IS NOT EFFECTIVE**

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REPORT BY THE  
OFFICE OF THE AUDITOR GENERAL  
TO THE  
JOINT LEGISLATIVE AUDIT COMMITTEE

P-224

THE STATE'S SYSTEM FOR PLANNING,  
PROGRAMMING, AND DEVELOPING HIGHWAY  
CONSTRUCTION PROJECTS IS NOT EFFECTIVE

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Honorable Art Agnos  
Chairman, and Members of the  
Joint Legislative Audit Committee  
State Capitol, Room 3151  
Sacramento, California 95814

Dear Mr. Chairman and Members:

The Office of the Auditor General respectfully submits its report concerning problems in the State's system for planning, programming, and developing highway construction projects, with recommendations for improvements in the process.

Respectfully submitted,

  
THOMAS W. HAYES  
Auditor General

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## SUMMARY

The State's current system for planning, programming, and developing highway construction projects leads to delays in project schedules and increases in project costs. Because highway improvement projects are not delivered as programmed, some of the State's transportation problems are not being eliminated as quickly as they could be, and some highway improvement projects are costing millions of dollars more than originally estimated. Deficiencies in the planning and programming of projects, in the centralized review of environmental documents, and in management control over project development are three principal causes of the current problems. We found no evidence that the delays resulted from policies of the agencies involved to slow construction projects intentionally.

### Inefficient Programming of Projects

The State Transportation Improvement Program (STIP) is the annual projection of expenditures for improving the State's transportation facilities. The STIP covers a five-year period. However, because of numerous changes in the delivery dates and the estimated costs of projects, the STIP cannot be depended upon as a firm schedule of projects programmed over the five-year span. Approximately 30 percent of the over 1,200 projects we reviewed in the 1980 STIP either encountered schedule delays or were deleted from the STIP. Two hundred twelve of the 1,257 projects we reviewed in the 1980 STIP have been delayed one or more years; the associated increase in capital costs was approximately \$230 million. Similarly, 131 of the projects we reviewed in the 1981 STIP have been delayed,

with cost increases over \$503 million. Furthermore, 180 projects listed in the 1980 STIP were deleted before the 1982 STIP was prepared.

There are complex multiple reasons for these schedule and cost changes. The hurried annual STIP development cycle and the constrained five-year STIP period lead to inadequate initial definitions of schedules and costs, resulting in changes when more information is gained from field study. In addition, the Department of Transportation's (department) procedures for assigning priority to projects each year have resulted in projects' being delayed or deleted from the department's proposed STIP. The numerous changes in delivery dates and costs decrease the efficiency of the programming of available funds and the department's project development.

#### Repetitious Centralized Review

The department's centralized process for reviewing and approving environmental impact documents is repetitious and time consuming. Various environmental documents must be approved both at the district level and at department headquarters at each step in a series of formal reviews. Approximately 30 percent of the total time necessary to obtain final approval of a project is spent at several steps in the review by department headquarters. As a result, proposed projects spend an excessive amount of time in the environmental review phase, thus delaying their completion.

#### Inadequate Management Controls

Finally, the department is not exercising adequate management controls to ensure that individual projects are delivered according to original schedules and within estimated

development costs. Almost 25 percent of the projects in our sample were more than one year behind schedule. We also estimate that \$136 million more than the amounts estimated will be spent for planning and design of 3,913 highway construction projects. Further, the department is not exercising adequate control to ensure that only projects on the current list of authorized projects are being worked on. We found 329 major projects, involving project development expenditures over \$3 million, that were being worked on but that were not on the department's current list of authorized projects. Although a number of factors can affect project schedules, planning and design costs, and capital costs, proper management controls could reduce project delays, schedule changes, and cost overruns and thus increase the performance of the project delivery process.

### Recommendations

The California Transportation Commission and the Department of Transportation could improve the efficiency of project delivery by establishing a system that adequately identifies estimated costs and alternatives for projects before the projects are listed in the STIP. The department could further improve the performance of the project delivery system by delegating authority for review and approval of certain environmental documents and other reports to district management and to qualified district coordinators and reviewers from headquarters. Such delegations should reduce the amount of time required for environmental review and approval. The department has recently instituted some of these changes. Finally, the department needs to institute additional management controls over project development.

In addition, the Legislature should modify existing statutes to provide for a longer STIP period in order to encompass adequate planning periods for major projects and for long-range funding needs. Further, the Legislature should create a biennial STIP development cycle and revise the appeals process to reduce the current problems caused by the tight schedules and to provide a more stable program for budget purposes. Finally, the Legislature should encourage the department's district offices and the Regional Transportation Planning Agencies to cooperate when developing the proposed STIP and the Regional Transportation Improvement Programs.



## INTRODUCTION

The Department of Transportation (department) and the California Transportation Commission (commission) are the agencies primarily responsible for controlling highway construction projects in California. To coordinate the numerous highway construction projects, the department and the commission develop the State Transportation Improvement Program (STIP), which is an annual projection, covering a five-year period, of expenditures for improving the State's transportation facilities.

### The Department of Transportation

The department is responsible for planning, developing, constructing, and maintaining the State's transportation facilities. To fulfill these responsibilities, the department administers four programs: Highway Transportation, Mass Transportation, Transportation Planning, and Aeronautics. In fiscal year 1982-83, the department's estimated staffing was over 15,000 personnel; its estimated expenditures exceeded \$1.8 billion.

The department is organized into four functional areas: Planning and Programming, Project Development and Construction, Maintenance and Operations, and Administration and Finance. These functional areas are administered by deputy directors who provide direction and support to the 11 district offices in the State. (Appendix A provides an organization chart of the Department of Transportation.)

In planning for and developing major highway construction projects, the department prepares an estimate of funds and a proposed STIP for review and approval by the California Transportation Commission.

#### The California Transportation Commission

The commission was established in 1978 by Chapter 1106, Statutes of 1977 (Assembly Bill 402), to provide a unified state transportation policy. This commission replaced and assumed the responsibilities of four independent bodies: the California Highway Commission, the State Transportation Board, the State Aeronautics Board, and the California Toll Bridge Authority. The commission consists of nine members appointed by the Governor and two ex-officio members of the Legislature. The commission has a professional staff of seven persons.

One of the commission's major responsibilities each year is the adoption of the State Transportation Improvement Program (STIP), the five-year expenditure program for state-funded transportation projects. In adopting the fund estimate and the STIP, the commission considers the department's five-year fund estimate and proposed STIP, and the proposals contained in the Regional Transportation Improvement Programs that Regional Transportation Planning Agencies (regional agencies), such as the Southern California Association of Governments, prepare after they have reviewed the fund estimate and the proposed STIP. In addition, regional transportation planning agencies in rural areas may submit comments on the department's proposed STIP.

The STIP allocates funds to projects, ranked in keeping with statewide interests, that are based on the commission's review of and public hearings on the various proposals. The adopted STIP is the department's authority to begin developing the transportation improvement projects. The commission is also required to evaluate the department's proposed budget and to provide a report to the Legislature.

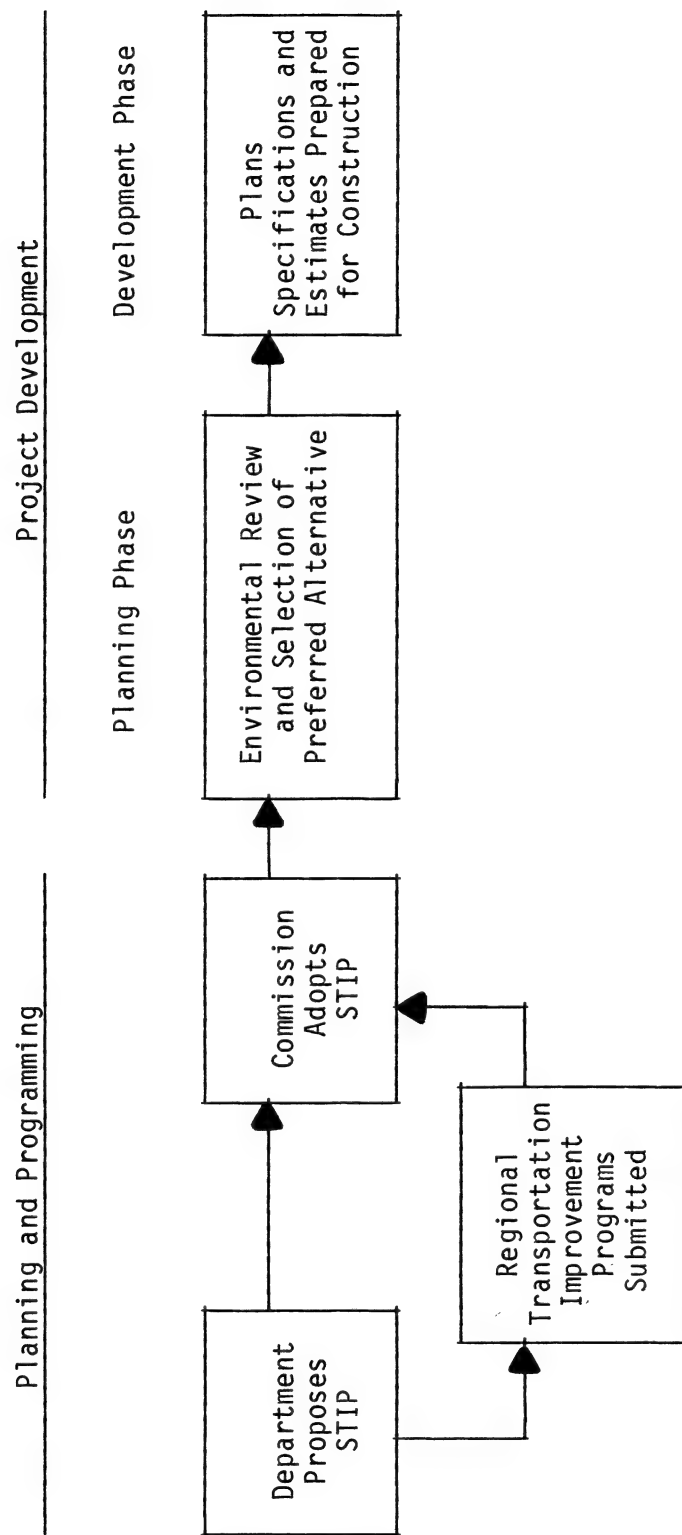
## The Project Delivery Process

The process for "delivering" highway projects includes all activities required to plan, program, and develop a project so that it can be advertised for construction. It is a complex process that can take more than ten years for some projects. The process has two major phases: planning and programming the projects in the STIP, and developing the projects.

Planning and programming include identifying and ranking transportation improvement projects, and incorporating these projects into the STIP. Project development involves identifying and analyzing alternative projects, performing environmental studies, conducting public hearings, establishing freeway agreements with local governments, acquiring right-of-way, and completing the plans, specifications, and estimates required for the construction. Project development is further subdivided into the planning and development phases. The major activities in the planning phase are selecting a preferred design alternative and obtaining environmental approval. The development phase includes completing plans, specifications, and estimates.

A simplified flow diagram of the project delivery process is shown in Figure 1 on the next page.

FIGURE 1  
SIMPLIFIED FLOW DIAGRAM  
OF PROJECT DELIVERY PROCESS



## SCOPE AND METHODOLOGY

Our staff used program auditing techniques to analyze the STIP process and the department's project development activities. We reviewed the 1980, 1981, and 1982 STIP documents to determine the number of projects delayed and the associated increases in capital costs. We analyzed a sample of 42 projects that had experienced schedule delays of one or more years to determine the reasons for the delays, the problems in the STIP process, and the effects on the costs of the projects. Because the first STIP was adopted in 1979, we selected the following samples from different universes.

We analyzed a sample of 40 projects subject to the environmental review process and scheduled for advertising in the 1981-82 to 1984-85 fiscal years, to determine the efficiency of this process and the reasons for the delays. We selected projects scheduled in these fiscal years so that we could examine more recent review procedures.

We analyzed a random sample of 180 projects from the 3,913 projects with open expenditure authorizations for planning and design in selected programs during fiscal year 1981-82. We drew our sample from programs for highway rehabilitation, operational improvements, and new facilities. We compared planning and design estimates and schedules with

actual performance to determine the extent to which projects are developed within the department's planned costs and schedules.

In conducting this examination, we interviewed key personnel at the department's headquarters and reviewed files and documents relating to highway construction projects. We also visited district offices in Marysville, San Francisco, Los Angeles, and San Diego to interview engineers and environmental planning staff in charge of the projects and to obtain additional documentation. Further, we interviewed commission staff as well as personnel from several regional agencies, including the Metropolitan Transportation Commission, the Southern California Association of Governments, and the Orange County Transportation Commission.

The overall effectiveness of the complex project delivery process depends largely upon the efficiency of the planning and programming of projects in the STIP and the efficiency of the department's project development activities. Chapter I discusses deficiencies in planning and programming, Chapter II analyzes highway construction projects subject to the environmental review process, and Chapter III examines the

department's adherence to internally planned development costs and schedules. All three chapters present reasons why highway construction projects are not delivered as programmed.

As these chapters illustrate, there is usually more than one reason for project delay, and the causes for the delay are not always mutually exclusive. Discrepancies in the planning and programming of a project adversely affect the project's development, and deficiencies in project development may make it appear that the project was not adequately planned and programmed. Therefore, our recommendations in Chapter IV are aimed at making the overall project delivery process more efficient by improving the planning, the programming, and the developing of highway construction projects.



## CHAPTER I

### HIGHWAY PROJECTS ARE NOT DELIVERED AS PROGRAMMED IN THE STATE TRANSPORTATION IMPROVEMENT PROGRAM

The California Department of Transportation (department) is not delivering highway construction projects as programmed in the State Transportation Improvement Program (STIP). Approximately 30 percent of the more than 1,200 highway projects we reviewed in the 1980 STIP either encountered schedule delays or were deleted from the STIP. At least 212 of these projects were delayed one or more years in the 1981 STIP; the associated increase in capital costs resulting from these delays was approximately \$230 million. Similarly, 131 projects listed in the 1981 STIP have been delayed, with an associated increase in capital costs of over \$503 million. Furthermore, 180 of the projects listed in the 1980 STIP were deleted before the 1982 STIP was prepared. However, we found no evidence that the delays resulted from policies of the agencies involved to slow highway projects intentionally.

Our analysis of 42 delayed projects revealed complex and multiple reasons for the delays; these reasons pertain to deficiencies in the planning, programming, and developing

of projects.\* A number of reasons relate to the hurried annual development cycle of the STIP and the constrained five-year STIP period. These factors lead to inadequate initial definitions of schedules and costs; consequently, as more information is gained from field study, projections must be revised. Forty-three percent of our sample of delayed projects had inaccurate schedules or cost estimates when the projects were placed in the STIP. In addition, the department's procedures for assigning priority to projects each year also cause delays. These procedures result in schedule changes for projects already listed for funding in a specified year or in deleting projects from the department's proposed STIP. Fifty-two percent of our sample of delayed projects encountered questionable changes in priority or schedule.

Because of the delays and changes, the STIP cannot be depended upon as a firm schedule of projects over the five-year span of programming. The numerous changes in project costs and delivery dates decrease the efficiency of both the programming of available funds and the development of projects. However, modifying the STIP development process to provide for better definition of projects before they are placed in the STIP and

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\* Delays caused by deficiencies in the management of project development activities will be discussed in Chapters II and III.

modifying the priority ranking procedures to minimize changes for projects already in the STIP could significantly increase the efficiency of the planning and programming of highway construction projects.

#### INEFFECTIVENESS OF THE STIP

Chapter 1106, Statutes of 1977 (Assembly Bill 402), established the California Transportation Commission (commission) and the STIP process to simplify and clarify the process of planning and programming transportation projects. Chapter 1166, Statutes of 1981 (Assembly Bill 1176), modified the STIP process by providing for a listing of projects whose development requires more than five years. This legislation appropriated additional funds to expedite project development. Chapter 541, Statutes of 1981 (Senate Bill 215), provided for increased revenues and also directed the department to expedite project development. These statutes express the Legislature's intent that the STIP process be used to plan, coordinate, and expedite the delivery of transportation projects.

However, the STIP has not yet developed into an effective instrument for statewide planning and coordination; it does not provide dependable projections for the year of construction and the amount of funding required. Approximately 30 percent of the more than 1,200 projects we examined in the

1980 STIP either encountered schedule delays or were deleted entirely. Comparing the projected construction dates in the STIP documents for the years 1980, 1981, and 1982 shows that lack of dependability is a continuing problem: 212 projects in the 1980 STIP were delayed one or more years in the 1981 STIP, and 131 projects in the 1981 STIP were delayed one or more years in the 1982 STIP. Furthermore, 180 of the projects originally listed in the 1980 STIP were deleted before the 1982 STIP was prepared. Some of the projects were deleted by the commission and others were delayed or deleted because of deficiencies in the department's planning, programming, and developing of projects.

Besides its lack of dependability as a document for scheduling construction, the STIP is not always dependable as a document for allocating funds. The cost changes and delays in projects lead to uncertainty regarding the amount of funding required to construct the delayed projects. This can be of particular concern because delays in periods of inflation can result in an increase of capital costs. The projects delayed between 1980 and 1981 STIPs represented approximately \$473 million in planned capital costs programmed for allocation in fiscal years 1980-81 through 1984-85. The delay of these projects contributed to an increase in planned capital costs of approximately \$230 million. Similarly, projects representing

approximately \$632 million in capital costs were delayed between the 1981 and 1982 STIPs, resulting in an increase of over \$503 million in programmed expenditures.

As the following sections in this chapter will show, there are a number of factors that are affected by the STIP cycle and that can contribute to increased construction costs, including poor original estimates, changes in the scope of projects by either the department or the commission, and lack of an initially clear definition of the problem to be solved.

#### PROJECT DELAYS CAUSED BY THE STIP DEVELOPMENT PROCESS

Certain aspects of the STIP development process make schedule changes, and thus project delays, more likely. The hurried annual STIP development cycle and the constrained five-year programming period lead to inadequate initial estimates of both schedules and costs. Consequently, schedules and cost estimates must be changed as more information is gained from field study.

The Hurried Annual  
STIP Development Cycle

The current annual STIP development process imposes some unrealistic deadlines, creates excessive competition between the department and regional agencies, and does not require adequate definition of project requirements before estimates are placed in the STIP. Table 1 on the next page shows the annual planning and programming process, which runs from October to September and which requires the preparation and review of a number of documents.

TABLE 1

SUMMARY OF THE ANNUAL STIP DEVELOPMENT PROCESS

<u>Date of Action</u>	<u>Component</u>	<u>Description</u>
October 1	Proposed Fund Estimate and Updated STIP	Department recommendations accompanied by the previous year's STIP updated for inflation, project cost changes, and project delivery changes, prepared by the department.
November 1	Adopted Fund Estimate	Commission formally adopts a fund estimate.
December 1	Department's Proposed STIP	Department's proposal for the next STIP.
April 1	RTIPs and Rural Agency Comments*	Proposals for the next STIP from regional and rural planning agencies.
April, May	Public Hearings	Commission holds hearings on proposals.
May 15	Comparison Report	Department compares the previous STIP with the proposed STIP, RTIPs, and rural comments.
By July 1	STIP Adoption	Commission adopts new STIP.
August 1	STIP Appeals	Department and regional agencies submit written appeals.
By August 15	Public Hearing	Commission holds hearings on department and regional appeals.
By September 1	Resolution of STIP Appeals	Commission resolves all appeals.

\* Regional Transportation Improvement Programs (RTIPs) are prepared and submitted by the various regional transportation planning agencies, representing urbanized areas of 50,000 people or more. Rural regional transportation planning agencies may submit comments on the department's proposed STIP.

As shown in the table, the process requires sequential preparation and action on a number of documents in short periods of time. Further, the cycle is continuous, with a fund estimate and updated STIP due on October 1, just one month after the resolution of appeals on the previous year's STIP. The department has never met the October 1 date for the fund estimate. The Chief of the Division of Highways and his staff said that this deadline is unrealistic because it takes from two to three weeks after resolving the appeals to print and publish the adopted STIP and another three weeks to update the estimates for the last four years of the adopted STIP. These officials further stated that the December 1 date for the proposed STIP is also unrealistic because a minimum of six weeks is required to prepare the proposed STIP after the fund estimate has been adopted. They also said that the proposed STIP is generally not distributed until January and that federal funding estimates may sometimes be changed, such as happened during the 1982 STIP cycle, causing the proposed STIP to be revised again in February.

Another problem involves the Regional Transportation Planning Agencies (regional agencies), which are required to adopt and submit their Regional Transportation Improvement Programs (RTIPs) by April 1. Three representatives from two of these regional agencies said that because the department's



proposed STIP is usually late, the regional agencies have little time to analyze the proposed STIP before preparing their RTIPs. Consequently, to meet the deadline, the regional agencies simply list all the projects that they want to pursue. Also, because the commission's policies allow each region to bid for surplus funds, each region's RTIP is competing for these funds against other RTIPs as well as the department's statewide proposed STIP.\* According to the department's comparison reports, the total funding requested in the RTIPs has always exceeded the amount included in the proposed STIP, which was prepared to meet the commission's adopted fund estimate. In 1980, for example, the total highway fund estimate was approximately \$2.8 billion; the RTIPs requested a total of \$3.2 billion. The highway fund estimate for the 1982 program was \$3.6 billion, and the RTIPs requested a total of \$4.6 billion. The commission must then choose from among the competing proposals, and it must also adopt the STIP by July 1. Moreover, after adopting the new STIP, the commission must hear and resolve all appeals by September 1.

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\* Net surplus funds are those in excess of the amounts needed for the updated STIP and the projected rehabilitation program; these funds are referred to as the "bid pot." A region may propose (bid for) new projects in accordance with the commission's rules for the competition.

As a result of this hurried and competitive STIP adoption process, some projects are ill-defined initially and cannot be delivered within the specified schedules and cost estimates. In fact, schedules and cost estimates for a number of projects must be changed immediately after the STIP is adopted. A department analysis of changes in project schedules showed that 77 major projects included in the last four years of the STIP adopted in 1980 were delayed one or more years in the updated version of that year's STIP. The added costs resulting from these delays totaled \$96.8 million. The department's analysis also showed that for the 1982 STIP, 52 major projects were delayed at an added cost of \$17.8 million. The cost increases stemmed from revised schedules and cost estimates and from revised inflation rate assumptions. The department's analysis did not include the effect of any changes in project scope that may be identified as the next year's proposed STIP is prepared.

The results of our field interviews suggest that a significant number of schedule and cost changes could be avoided if better estimates were made before a project is listed in the STIP. Forty-three percent of our sample of delayed projects had been listed in the 1980 STIP or the 1981 STIP with schedule or cost estimates that were later found to

be inadequate for various reasons. Consequently, schedule delays or cost increases occurred when the early figures were revised.

For example, a project to reconstruct a bridge across the Upper Truckee River in El Dorado County was listed in the 1980 STIP. The estimated cost of the project was \$218,000, and construction was to begin in the 1981-82 fiscal year. These original rough estimates were taken from a bridge maintenance file when the project was proposed, before study of the project had been authorized or begun. Almost immediately after beginning their fieldwork, design engineers determined that more extensive work would be required; the total estimated construction cost was then projected to be \$1.1 million.

The district sent the revised estimate to the department headquarters in February 1980, six months before final adoption of the 1980 STIP. However, the updated cost was not reflected in the STIP document until 1982, more than two years later. The project was listed in the 1982 STIP with a cost estimate of more than \$1.3 million; the scheduled year of construction was postponed to the 1982-83 fiscal year. If some fieldwork had been conducted before programming the project in the STIP, the original estimate would have been much more accurate, and a \$1 million shift of projected funding

allocation could have been avoided. Furthermore, if the updated estimate had been provided to the commission sooner, the commission would have been better informed when choosing projects for the 1980 STIP and the 1981 STIP.

In another example, a project to restore the planting and irrigation system on a short section of Highway 101 in Los Angeles County was placed in the 1980 STIP with an estimated cost of \$110,000 in the 1983-84 fiscal year. Preliminary study of the project and initial fieldwork disclosed complications that increased the estimated cost to \$291,000 and delayed the schedule to the 1986-87 fiscal year.

Finally, a new traffic management system for the San Francisco-Oakland Bay Bridge was listed in the 1979 STIP with a cost estimate of \$1.5 million for construction in the 1980-81 fiscal year. The projections were based on incomplete file information taken from a previous project report. Fieldwork done shortly after the project was programmed in the STIP disclosed technical complications that required a rescheduling of the project to the 1981-82 fiscal year and that increased the estimated construction cost to \$2.97 million. The revised estimates were then maintained through both the completion of project development and the start of construction. The contract for the project was awarded in June 1982 at a final

estimated construction cost of \$2.95 million. This project's history demonstrates that cost estimates based on fieldwork are more likely to approximate actual costs than estimates based only on project files.

Inadequate initial estimates have also occurred in projects proposed by regional agencies through the Regional Transportation Improvement Program process. For example, a city in Los Angeles County proposed a ramp-widening project on Highway 605. The project, which appeared on a list proposed by a regional agency rather than the list proposed by the department, was placed in the 1980 STIP. According to our interviews with department engineers, the proposed construction schedule for the 1980-81 fiscal year could not be met because project development had not begun at the time the STIP was adopted in June 1980. Even though this project was locally funded, with the city doing the design work and the department acting as reviewer, the result was the same as in the preceding examples: the initial schedule contained in the STIP was not realistic.

Each of the examples discussed above has an element in common: the schedules and cost estimates initially adopted in the STIP were based on inadequate information and had to be revised soon after the start of actual fieldwork. Improving

the accuracy of initial estimates for these and similar cases would make the STIP a more dependable document for scheduling and allocating funds for highway construction projects. Current practices do not, however, include a process by which careful estimates are made for projects before they are listed in the STIP and before schedules are set and capital costs committed. It is the department's current policy to begin fieldwork and project study only after the project has been either formally listed in the STIP or approved through the project authorization request process.

The department could improve its estimates, however. For example, in stage I of the planning phase of project development, district staff identify a range of design alternatives, costs, and schedules. Three department staff, in senior level planning positions, told us that estimates would be improved if some of this work were done before a project was adopted in the STIP. Two of the planners suggested that this work could be limited to a summary fact sheet specifying requirements for a district's highest priority projects. This suggestion is not a new one. A similar suggestion to do the stage I work before STIP adoption was submitted during the department's cost overhead reduction campaign. Further, the department's "Transportation Planning Manual," published in

August 1982, requires the districts to submit a stage I work program with project authorization requests to begin work on projects not on the STIP.

If the STIP development cycle were modified to include a specified period for producing adequate project estimates and for providing those estimates to the commission, the STIP development process would be more effective. The modification might be facilitated by adopting the STIP on a biennial basis, or by encouraging the department's district offices and the regional agencies to cooperate in preparing the proposed STIP and the Regional Transportation Improvement Programs.

#### The Constrained Five-Year Program

Another aspect of the STIP process that leads to schedule delays and cost increases is the limitation imposed by listing all projects within a five-year schedule. In many cases, the five-year schedule is adequate, but some projects are expected to require more than five years to develop because of size, complexity, environmental problems, and community opposition. There is currently no specific procedure within the normal STIP proposal process to deal with such projects. In fact, the department's Capital Projects Priority Process Manual does not assign priority numbers to these projects

because they do not fall within the five-year limit. There are several methods that have been used to deal with projects exceeding the five-year span of the STIP. Each of these methods has its drawbacks, however.

One method is to schedule projects requiring more than five years in the fifth year of the five-year STIP and then postpone the projects an additional year in each succeeding STIP. In these cases, rough estimates of cost are also likely to be altered each year as more project data are gathered or as adjustments are made for inflation. For example, based on a Regional Transportation Improvement Program, a proposed new interchange in Los Angeles County on Interstate 405 at Arbor Vitae was included in the 1979 STIP for construction in fiscal year 1983-84. Our interviews disclosed, however, that the district engineers had never believed that this schedule could be met. The project involved complex environmental and right-of-way questions, and concerned local organizations were uncertain about some aspects of funding. District engineers told us that more than five years would be required to resolve the issues and develop the project. The engineers believed that, to continue authorization to work on the project, their only recourse was to postpone the schedule one year with each STIP update until some of the issues could be resolved.



Besides postponing the construction date each year, another means of circumventing the constraints of the five-year limit is programming large projects as a series of smaller ones to be developed and constructed in sequence. While this approach is useful, it may lead to a series of schedule delays and increase the number of changes in the STIP. For example, a ramp metering project on Interstate 10 in Los Angeles County was actually the fourth in a sequence of projects along the freeway. This project encountered schedule delays because of problems with the first project in the sequence. Thus, even though major problems occurred in only one segment, a whole series of schedule delays in the STIP resulted from segmenting a large freeway project whose overall plan required more than five years to complete.

A third way of dealing with projects whose overall planning and development may require more than five years is to list them in the STIP with "scope to be determined." This type of listing has sometimes been used to allocate funds for a project even though there was uncertainty or disagreement over the nature of the project that would eventually be built. From a programming standpoint, the problem with this approach is that projects of differing scope require different schedules and cost estimates. Consequently, projects listed in the STIP with "scope to be determined" cannot include dependable projections for schedules and costs.

An improvement project on Highway 126 in Ventura County, placed in the 1979 STIP with "scope to be determined," illustrates this problem. One reason that the project was listed in this manner is that there was a disagreement over alternatives, with local and regional agencies strongly supporting a larger version of the project than the department wanted to fund. Another reason was that the Federal Highway Administration demanded a careful and comprehensive study of the entire Route 126 corridor from Santa Paula to Interstate 5. This study was to evaluate the environmental impact of the proposed improvements and discuss the cumulative impact of successive projects. After several years of discussion and review, however, the scope of this project is still not fully determined. At the time of our review in October 1982, it was not clear which version of the project would be built, and over what portion of the highway corridor.

For complex and controversial projects such as the above, it may be impossible to make overall schedule estimates within a five-year limit, especially when there is a need to conduct extensive studies like that called for by the Federal Highway Administration. In such cases, the department and the commission should make use of the long lead time process, provided by Assembly Bill 1176, to authorize development and planning of the entire project. The STIP could also indicate

that the comprehensive study of the highway corridor would be the basis for determining the scope and schedule of project segments.

PROJECT DELAYS CAUSED BY  
THE DEPARTMENT'S RANKING  
AND SCHEDULING PROCEDURES

The department's procedures for assigning priority to or changing the schedules of projects listed in the STIP also caused the delay or deletion of projects. Each year the department measures the relative urgency and feasibility of proposed highway construction projects using a variety of formulas and judgment categories. The department's procedures are not sufficiently coordinated with the STIP process, however, and this problem has led to a significant number of delays and deletions of projects listed in the STIP. Of the 42 projects in our sample of delayed projects, 52 percent were delayed primarily because of the ranking and scheduling procedures.

For example, the department reviewed a three-mile roadway reconstruction project on Route 129 in Santa Cruz County included in the 1980 STIP. Using new scoring procedures, the department reranked and deleted this project from the proposed 1982 STIP. In response to an appeal from a regional agency, the commission reinstated the project, but the

final 1982 STIP shows a two-year schedule delay and a 69 percent increase in the projected cost compared to the 1980 STIP. Both the department's district office and the regional agency had supported the project because much of the design work had already been done and because this project was the last segment of a ten-mile reconstruction project that had been planned since 1973 and that was otherwise completed. Our study disclosed that the department headquarters did not include this information or the project's status on the STIP in the scoring procedures that assigned lower priority to the project.

Another example of the problem is evidenced by a ramp metering project covering 22 miles of Route 17 in Alameda County. The department headquarters included this project in the proposed 1979 STIP, deleted it from an early version of the proposed 1980 STIP, and then reinserted it after the district appealed the deletion. The project was retained with the same schedule in the 1981 STIP but was delayed two years in the 1982 STIP. Department staff in the STIP Development Branch stated that the delay was due to a combination of a funding shortage and the project's lower priority. In this example, as in the previous one, there was no indication that the department had considered the project's background or its presence on three previous STIP documents before assigning lower priority to the project.

We recognize that reviewing and ranking procedures are necessary for the effective management of a large, complex planning activity like the state highway program. The problem in the example just cited from Santa Cruz County is not that the project was reranked, but that it was reranked without sufficient reference to the work already completed and to the project's status in the current STIP. In many cases of roadway rehabilitation, however, changing conditions require a shorter planning schedule than that provided by the STIP's five-year framework. Department managers stated that it is difficult to predict five years in advance which areas of a roadway will be in most need of repair. Although the STIP process currently requires scheduling of specific highway rehabilitation projects for the entire five-year period, the changing conditions make some projects more urgent and others less urgent as the scheduled construction year approaches.

A deputy director of the department told us that although the relative urgency of specific projects is difficult to predict, the annual funding requirements for roadway rehabilitation have been generally consistent and predictable throughout the State. If specific projects were scheduled only for the first two years of the STIP, with lump sums allocated for the later years, the number of schedule changes would be reduced and there would be more programming flexibility in the

STIP. Then, as the department assessed changing conditions, the commission could adopt specific projects on the basis of the latest information.

Besides the problems caused by the department's reranking procedures, problems have also occurred because the department has made schedule changes without using all available information. For example, the construction date for a curve improvement project on Route 174 in Nevada County was delayed one year on the basis of projections made by a new computer program at department headquarters called PYPSCAN (Person-Year, Project Scheduling, and Cost Analysis). This program estimates schedules based on historical statewide averages of development time and staffing levels for each type of project. District engineers stated that the project was almost ready for construction and could have met the schedule listed in the 1980 STIP.

A project on Route 73 in Orange County further exemplifies how the department's scheduling system led to delays. The district office proposed two alternative freeway designs costing \$5 million and \$9.4 million, respectively. The district office indicated that only the larger version would eliminate the congested traffic and satisfy the request of the city concerned. When department headquarters rejected the more

expensive alternative as too costly and chose to include the smaller version in the proposed 1980 STIP, the regional agencies appealed through the RTIP process. Subsequently, the commission approved the larger version and included it in the 1980 STIP for the 1982-83 construction year. Because the 1982-83 construction year had been projected for the smaller rather than the larger version, the schedule had to be corrected in the 1981 STIP, and the project was rescheduled for the 1983-84 construction year. Then, because the PYPSCAN program indicated that the 1984-85 construction year was appropriate for the \$9.4 million project, department headquarters scheduled the project for 1984-85 in the proposed 1982 STIP. Despite these changes, however, district engineers stated that they were maintaining the 1983-84 schedule that they had projected originally. As a result of appeals submitted by the regional agency, the commission rescheduled the project for the 1983-84 construction year.

In these and other similar cases, the department headquarters had access to relevant information, readily available from the district engineers. That information could have been reviewed during the scheduling process before the project delays were incorporated in the STIP, thus preventing unnecessary schedule delays. Department staff in the STIP Development Branch indicated that such reviews are possible,

but said that they are used only to check districts' requests for project delays; they are not used to check delays initiated by department headquarters such as those based on PYPSCAN projections. If including a project in the STIP had qualified it for careful review before a schedule change, these delays would not have occurred.

These problems in the department's ranking and scheduling procedures have occurred because the procedures were insufficiently coordinated with the STIP process. The department's Capital Projects Priority Process Manual does not indicate that projects listed in the STIP should receive special consideration when the department assigns project priorities.\* Furthermore, projects listed in the STIP are not given special review when they are rescheduled as a result of PYPSCAN projections. Moreover, the department has not implemented a consistent computerized method of identifying and tracking the projects in each STIP document. In fact, several department officials responsible for developing the proposed STIP stated that they view the STIP as a "reservoir of projects" for budgeting purposes and not as a detailed schedule

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\* We found one possible exception in the new highway construction program (HE-1). The manual allows the assignment of a maximum of 25 points out of the 385 points available for ranking if a project is on the previous STIP or on the department's proposed STIP.



of projects to be delivered as programmed. However, because the STIP, by law, has been adopted as a means of coordinating highway planning throughout the State, projects that have been included in the STIP should be given special consideration before their priority or their schedules are changed.

## CHAPTER II

### THE DEPARTMENT OF TRANSPORTATION'S CENTRALIZED ENVIRONMENTAL REVIEW PROCESS IS NOT EFFICIENT

The Department of Transportation's procedures for approving interim and formal environmental review documents are time-consuming and repetitive. Streamlining the department's procedures by delegating interim approvals to district management and to coordinators and reviewers from headquarters could save approximately four months of the time required for approving environmental reviews. This would also expedite the planning phase of project development, use staff time more efficiently, and solve transportation problems more quickly.\*

Environmental reviews were completed for 21 cases in our sample of 40 projects. Complete environmental review data necessary to determine the amount of time spent in review at headquarters were available for 15 of the 21 cases. For these 15 cases, approximately 30 percent of the total time required to obtain approval of environmental documents was spent at department headquarters. In addition, for half of our 40

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\* As stated on page 4 of the Introduction, the major activities in the planning phase of project development are selecting the preferred design alternative and obtaining environmental approval.

sample cases, department headquarters required interim documents to be revised and resubmitted by district staff, thus adding more time to the environmental review process.

Environmental laws are complex, and headquarters management, as well as Federal Highway Administration officials, must approve formal draft and final environmental documents. Although experienced staff from department headquarters visit the districts to assure that environmental studies and project development documents comply with environmental laws and departmental policies, other reviewing staff at department headquarters must also review and approve the documents at four steps during the environmental review process.

During our review, department management recognized the problems we identified and instituted some changes. We report the department's changes at the end of this chapter.

### The Environmental Review Process

The National Environmental Policy Act of 1969 and the California Environmental Quality Act require an assessment when proposed projects can have a potentially significant effect on the environment. The department must identify, for example, the effect of construction projects on air and water quality,

noise levels, endangered species, archaeological and historical sites, and parklands; it must also propose measures to avoid adverse effects on the environment whenever possible. As part of its assessment, the department prepares either an Environmental Impact Report or Statement, or a Negative Declaration. An Environmental Impact Report or Statement identifies a project's significant effects on the environment and the manner in which the negative effects can be mitigated or avoided. A Negative Declaration states the reasons that a project will have no significant effect on the environment. In addition, certain other projects are classed as having no significant effect on the environment and are excluded from formal environmental review.

We were told by the former Deputy Director for Planning and Programming that the department's policy has been to follow the "letter and intent" of the complex environmental laws. In the years following the passage of the National Environmental Policy Act of 1969 and the California Environmental Quality Act, the laws changed frequently. New areas of required environmental impact studies, such as effects on endangered species, were applied retroactively to projects still in the planning stages. Department management centralized the review and approval of environmental documents to assure their consistency and to assure their compliance with

environmental laws and departmental policies. However, centralizing the environmental reviews has led to additional headquarters review time.

The department has established procedures to carry out environmental impact reviews as part of the project planning phase of project development. The environmental review process entails four steps. In the first two, the stage I and stage II project work programs, district design engineers and environmental planning staff identify such information as project costs, the environmental document to be prepared, traffic counts and projections, and a range of design alternatives to be studied for the project. District staff prepare and submit the stage I and stage II documents to headquarters for review and approval. (The stage II document is more refined and detailed than the stage I document.) The Division of Transportation Planning, under the Deputy Director for Planning and Programming, is primarily responsible for obtaining the necessary reviews and approving, at headquarters, the planning documents through stage II and the draft and final environmental documents. The Division of Transportation Facilities Design, under the Deputy Director for Project Development, is primarily responsible for reviewing and

approving design issues. The planning phase of project development is thus under the authority of two deputy directors and two division chiefs.\*

At the third step, district staff prepare and submit the project report with the draft environmental document to headquarters for approval. The Office of Planning and Design, within the Division of Transportation Facilities Design, obtains the necessary reviews and approvals for the project report, which includes such information as proposed alternatives, design features, and estimated costs. The Office of Environmental Planning, within the Division of Transportation Planning, reviews the draft environmental document. After the Chief of the Division of Transportation Planning approves it, the draft environmental document circulates for public comment. A public hearing is held if an Environmental Impact Statement is required; a public hearing may be held for a Negative Declaration. (A draft Environmental Impact Statement presents several design alternatives and describes their effects on the environment, while the draft and final Negative Declaration documents normally focus on a preferred design alternative for a project and include a

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\* The process we have described here reflects procedures that were in effect during our review. Recent changes in the department's organization are reported at the end of this chapter.

discussion of other alternatives.) After the public comment period, a committee of the department's top management selects a preferred design alternative for projects with Environmental Impact Statements. At the fourth step, district staff prepare a final Environmental Impact Statement, which they submit to headquarters for review and final approval. The Federal Highway Administration must also review or approve draft and final environmental documents for most projects.

THE CENTRALIZED ENVIRONMENTAL  
REVIEW PROCESS IS TIME CONSUMING

The department's procedures for centralized review and approval of environmental documents at headquarters are time consuming. We examined a sample of 40 projects, of a total of 501, to observe how the department accomplishes the environmental review and to determine the time needed to complete this review. As of December 1982, the environmental documents for only 21 of the 40 projects in our sample had been completely approved, and data to determine the time spent in review at headquarters were available for only 15 of the 21 projects. The mean time from the beginning of study to the final approval of the environmental documents was 37.6 months; the mean time for the review by department headquarters and the Federal Highway Administration was 10.9 months. The total time necessary for development and approval of environmental

documents ranged from 8.3 to 95.0 months. Table 2 below shows the mean time taken for review at each step for both the 21 cases with completed environmental review and the 19 cases with uncompleted review.

TABLE 2

ENVIRONMENTAL REVIEW PROCESS  
MEAN TIME SPENT IN REVIEW  
BY DEPARTMENT HEADQUARTERS

	<u>Stage I</u>	<u>Stage II</u>	<u>Project Report<sup>a</sup></u>	<u>Draft Environmental Document</u>	<u>Final Environmental Document<sup>b</sup></u>
Cases with completed review	2.4 mo.	1.9 mo.	3.8 mo.	4.6 mo.	3.4 mo.
Cases with uncompleted review	2.8 mo.	1.2 mo.	2.8 mo.	4.0 mo.	none

<sup>a</sup> The Project Report is usually reviewed concurrently with the draft environmental document.

<sup>b</sup> Final environmental document review and approval includes Federal Highway Administration review time.

As the table shows, approximately one to four and one-half months were spent in each of the formal review steps occurring outside the districts.

Although the project report and the draft environmental document are submitted together to headquarters, they are reviewed and approved separately; the Office of Environmental Planning (in the Division of Transportation



Planning) reviews the draft environmental document, and the Office of Planning and Design (in the Division of Transportation Facilities Design) reviews the project report. Yet, before the documents come to department headquarters, district coordinators from the Office of Planning and Design and reviewers from the Office of Environmental Planning, acting as liaisons from headquarters, are in frequent contact with district project development teams and are familiar with the projects and the issues involved. The districts' management as well as the coordinators and reviewers from headquarters approve the documents before submitting them to headquarters.

When the final environmental document is submitted to headquarters, an average of 3.4 months elapses before the department's management and the Federal Highway Administration give final approval. The department sends documents to the Federal Highway Administration after the documents have been approved by the department's management. According to procedures, Federal Highway Administration representatives are to be kept informed of project developments from the beginning of studies.

The effect of the time-consuming review by department headquarters is to lengthen the total time required for approving environmental documents. An average of 29.2 percent of the total environmental review time was spent in review at

headquarters and the Federal Highway Administration. For example, it took 28 months to complete the environmental approval process for a highway roadside rest facility; 45.5 percent of this time, 12.75 months, was spent in reviews occurring outside the district. Stage I and stage II reviews at headquarters took 4.5 months; headquarters' review and approval of the project report and the draft Negative Declaration took 4.0 months. Furthermore, the final review and approval by department headquarters and the Federal Highway Administration took an additional 4.0 months. As we will show later in this chapter, streamlining the environmental review process could reduce some of this time and improve efficiency.

#### Repetitive Reviews Further Lengthen the Environmental Review Process

Besides being in itself time consuming, the centralized environmental review also entails repeated reviews at some steps in the process. For half of our sample of 40 projects, department headquarters required districts to revise and resubmit various documents, thus adding more time to the environmental review process. This repetitive review occurred both for 8 projects initiated by local agencies and for 12 projects initiated by the department.

### Locally Initiated Projects

The department, as owner and operator of the State's transportation facilities, has the authority to review and approve locally developed projects affecting state facilities. The department can thus request additional information or justification for local projects if it believes that such information or justification is necessary. For six of the eight local projects in our sample with repetitive reviews, department headquarters required local entities to submit additional traffic data even though the local entities frequently were funding the entire cost of the projects and the projects addressed locally determined transportation needs that had been identified at the outset.

In Orange County, for example, a proposed freeway interchange project, one of two totaling an estimated \$10.2 million in 1981, is being funded by a city with funds from a private developer who is also planning a large commercial complex and industrial park in the same area. The interchange will serve the new developments. Delays occurred in the review and approval of project planning documents because the department asked the developer's consultant to provide additional traffic data pertaining to the two freeway interchange projects. The existing facility is below standard, and the department has recognized that traffic congestion will

occur in this area if the two interchanges are not built. The district finally took on the responsibility of providing the traffic data itself. Nevertheless, it took over five years to reach environmental approval for the proposed freeway interchange project.

In another case, a locally funded project to construct additional freeway on and off ramps in Santa Clara County was first proposed by a city in 1975. At the time that headquarters approved the initial report on the project in 1979, traffic levels indicated the need for the additional ramps. This relatively minor project was delayed for over a year after headquarters and the district requested a revision of the initial work that had been done by the city's consultant. The city asked the department to take over the project early in 1981. In 1982, after the project had been under study for almost four years, the district requested that headquarters delegate authority to the district to approve the stage II documents and the draft environmental document. This would expedite the project. However, headquarters refused, citing the need to adhere to standard procedures.

Delayed environmental reviews occurred frequently in projects developed by consultants for local agencies because work submitted by consultants did not adequately follow the

department's policies and procedures. The department requires that work be performed in accordance with the guidelines set forth in department manuals and instructions. Engineers in one district and the Chief of the Transportation Analysis Branch told us that there is no uniform department procedure for informing consultants and local agencies at the outset of all requirements for developing a project according to department standards. In one case, according to the project engineer, consultants did not receive at the beginning of a project a set of the department's manuals and instructions that were relevant to the work. Two years after the consultants began, they still had not received a procedures manual. Thus, the work of local agencies' consultants may at times be unacceptable simply because the consultants do not understand what is required by the department.

The problem of local agencies' or consultants not being informed of the department's requirements can be avoided, however. A project engineer in one district told us that agreements to provide the department's manuals may be written into an initial letter of understanding between the department and a local agency. Although availability of the department's manuals does not guarantee that local agencies and consultants will follow department procedures, establishing and consistently following a procedure to ensure that local agencies and consultants are fully informed of the department's

requirements may help to eliminate the lack of understanding and may reduce the amount of time required for review and approval of projects.

#### Departmental Projects

Twelve departmentally initiated projects also experienced delays because planning documents had to be revised and resubmitted. These projects could have been processed faster with a more decentralized review and approval process. For example, district staff were developing a project to replace a dangerous bridge over the Russian River in Sonoma County. Department headquarters required the team to analyze an additional alternate construction site that both district and headquarters engineers had rejected three years earlier because the ground in the area was considered unstable. The Federal Highway Administration's division engineer had also expressed concern about the suitability of the alternate site. Analysis of this additional alternative has delayed the draft environmental document 19 months. The project has been under study since 1977, and the draft environmental document had not been resubmitted as of October 1982.

For another project, an interchange in Contra Costa County, department headquarters approval of the draft environmental document took over nine months because

headquarters had concerns about the need for the project and the growth in the area that might be induced by the project. The district had already identified existing traffic congestion and accident rates, and further stated that growth would occur even without the project. Moreover, both the district reviewer from headquarters and the Federal Highway Administration engineer had already reviewed the project.

#### Other Factors Delaying the Environmental Review Process

Projects can also be delayed during the environmental review process by factors that are outside the department's control. For example, controversy arising during public comment on environmental review documents delayed 8 of our 40 sample projects. In one case, a project development team had to evaluate an additional site for a highway maintenance station in Ventura County. This evaluation was made in response to a request that the local city council submitted after reviewing the draft negative declaration.

Unusual environmental factors, such as archaeological sites or endangered species in the area, contributed to the delays experienced by 11 of our sample projects. For example, an interchange project in San Mateo County near the San Francisco International Airport has been under study since 1970. The project was delayed in September 1982 for at least

two more years while biologists study the endangered San Francisco garter snake and its habitat. Another project in Alameda County required an archaeological "dig" as part of the process to mitigate the adverse effect of the project. Contracting with consultants for archaeological exploration has been especially time consuming: the contract process alone takes from seven months to over two years.

In addition, permits from agencies such as the Coastal Commission, the Coast Guard, or the U.S. Fish and Wildlife Service must be obtained when projects affect areas for which these agencies are responsible. For the Dumbarton Bridge project in the San Francisco Bay Area, the department had to obtain permits from six other agencies in addition to establishing agreements with two cities at the western end of the bridge.

Finally, district engineers told us that reductions in funding have also caused projects to be delayed from original schedules. The department had a draft environmental document ready for public circulation in 1974 for the Cloverdale Bypass in Sonoma County but funding shortages caused the project to be dropped. The project was not rescheduled until the 1979 STIP.



## DECENTRALIZING THE ENVIRONMENTAL REVIEW PROCESS COULD SAVE TIME

Although some factors causing project delays are outside the department's control, the department could improve its environmental review process by decentralizing and thereby streamlining certain reviews and approvals. The department could more effectively use its district staff and its district coordinators and reviewers from headquarters to expedite the planning phase of project development.

Delegating decision making to the lowest feasible level in the department is one way to increase efficiency. District coordinators and reviewers from headquarters become familiar with projects by visiting the districts and participating in project development team meetings. In addition, they meet regularly with each other to keep apprised of a project's status of development. The responsibility of the district coordinators and reviewers is to assist district staff in solving problems as they arise and to assure that projects comply with laws and departmental policy. Furthermore, reviewers from headquarters said that many districts have staff members with expertise in specific environmental issues and the required environmental studies.

However, not one of the four steps of review and approval is completed at the district level, despite the fact that district coordinators from headquarters as well as district staff review the documents while they are still at the district. Headquarters management has the final approval within the department for the environmental documents, but if the authority to approve interim steps of environmental study and preliminary project development were delegated to the district level, approximately four months could be saved in stage I and stage II review for projects involving Environmental Impact Statements. In addition, approving draft Negative Declarations in the district could save approximately four months. Approval of draft Negative Declarations at the district level could save a significant amount of time for the department because projects involving Negative Declarations constitute over half of the 501 projects in the department's August 1982 list of authorized projects that were subject to environmental review.

If the department headquarters and the district could agree which alternative designs would be studied at the time a project is listed in the STIP, the district could then carry out the environmental review with district coordinators and reviewers serving as liaisons with and consultants from headquarters. Authorizing the district coordinators and

reviewers, as well as the district directors, to approve preliminary documents whenever feasible would expedite the planning, reviewing, and approving of projects.

Expediting projects is particularly important because projects that require long periods of time for review and approval may be susceptible both to changes in the scheduled year for construction and to increased cost, as we discussed in Chapter I and as we will discuss further in Chapter III. Of our sample of 40 projects, 15 (37.5 percent) are currently scheduled for at least one fiscal year later than the year for construction indicated in the 1982 STIP. These projects are also susceptible to increases in planning and design costs because of additional time required for project staff to revise and resubmit various project documents.

Finally, another adverse effect of the current environmental review process is that projects that are planned to solve transportation problems are not built in as timely a manner as might be possible with a more streamlined environmental review. Therefore, transportation problems are allowed to exist for a longer period of time than may be necessary. For example, in 1977, the department identified the need for a safety improvement project, which is part of a

series of projects to improve Route 67 in San Diego County. The accident rate for this segment was six times the statewide rate, and in a 4-year period, ten fatalities had occurred. The California Highway Patrol had identified this segment as a problem needing correction. Furthermore, four lawsuits for damages were filed against the State for allowing a dangerous highway condition to remain. The State settled these suits out of court for \$241,000.

Department headquarters required the district project development team to revise the federally required survey report on historic properties four times. Headquarters also required the district project development team to submit two supplemental project reports that identified solutions that cost less. The headquarters review of the project required more than 6 months--over one-fifth of the total time needed to complete the environmental review.

Besides requiring revisions, headquarters had also expressed concerns that the safety improvements, proposed in this project, and the others in the series, would induce growth in the area. (Avoiding growth in less developed areas is a part of the State's urban strategy and is also department policy.) When this project was approved, the high accident rate was cited as the primary justification for its need. However, during the period of this project's environmental

review the district project development team spent several months analyzing, and negating, the growth effects of safety improvements before headquarters would approve any further projects along this route.

Recent Corrective Action  
Taken by the Department

Department management have recognized the need for expediting project planning and environmental review, and have recently made procedural and organizational changes. As of January 14, 1983, stage II documents will only be prepared for selected cases; stage I and stage II documents will be approved in the districts for all projects except those that are sensitive or controversial. Also, the Chief of the Office of Environmental Planning, instead of the Chief of the Division of Transportation Planning, will approve environmental documents. In addition, the department transferred the Office of Environmental Planning to the Division of Project Development, formerly called the Division of Transportation Facilities Design, giving the authority and responsibility for project planning and design to a single deputy director.

### CHAPTER III

#### THE DEPARTMENT DOES NOT EXERCISE ADEQUATE MANAGEMENT CONTROL OVER PROJECT DEVELOPMENT

The Department of Transportation is not exercising adequate management controls to ensure that projects are completed within cost estimates for project development and within original schedules. Rather than monitor planning and design expenditures for individual projects, the department monitors expenditures only for the various types of transportation improvement programs, such as rehabilitation or new highway construction. As a result, there is no consistent effort to compare actual project expenditures with amounts originally estimated, and the development costs for many projects far exceed the estimated amounts. Based on our review, we project that the department will spend \$136 million more than the amount estimated for the planning and design of 3,913 projects in development during fiscal year 1981-82. In addition, almost 25 percent of the projects we reviewed were more than one year behind schedule.

Furthermore, the department is not exercising adequate control to ensure that only projects on the current list of authorized projects are being worked on. We found 329

active major projects, involving project development expenditures totaling more than \$3 million, that were not on the department's current list of authorized projects.

As we discussed in Chapter I, deficiencies in the State Transportation Improvement Program (STIP) development process and the department's changing of project priorities cause delays that affect capital costs and schedules. As we discussed in Chapter II, the department's centralized environmental review process has also created delays and lengthy project planning periods. Proper management controls could reduce both project delays and schedule changes and thus increase the performance of the project delivery process.

#### The Department's Project Management Systems

The department uses an expenditure authorization system in authorizing work, estimating costs and schedules, and accumulating the costs of developing and constructing a project. Expenditure authorizations are issued separately for each phase of work on a project. The expenditure authorization document contains the estimated dollars and hours needed to complete the requested phase of work, the target dates for that phase of work, and the fiscal year in which construction is to occur. In addition, the expenditure authorization includes an

estimate of the construction costs for the entire project. This information is entered into a computerized file called the "expenditure authorization masterfile." The information in the expenditure authorization masterfile can be used to help manage the project development process.

In 1980, the department implemented a project development management system called the Automated Capital Scheduling Plan. This system provides information on person-years, project schedules, and capital costs both for programs and for individual projects. The Automated Capital Scheduling Plan includes all capital outlay projects that are authorized for work by the department, whether these projects are in the STIP or not in the STIP.

The portion of the Automated Capital Scheduling Plan system that calculates the number of person-years required and estimates schedules for projects is a computer program called "PYPSCAN" (Person-Year, Project Scheduling, and Cost Analysis). PYPSCAN calculations are based on historical information relating to project costs and schedules. The department used this system to develop its budget for fiscal year 1981-82.



The department plans to add a second component to the PYPSCAN system that will compare planned versus actual expenditures for project monitoring and management purposes. This component was to be completed by July 1982, but it had not been completed at the time of our review.

ESTIMATED COSTS AND  
SCHEDULES ARE INACCURATE

The department is not adequately monitoring individual project development costs to ensure that projects are being delivered within estimated costs for project development. We estimate that the department will spend at least \$136 million more than estimated for 3,913 projects with open expenditure authorizations for project development in fiscal year 1981-82. Furthermore, almost 25 percent of the projects in our sample were more than one year behind schedule, primarily because of changes in project priority. One of the effects of project delays is increased capital costs, and we found that capital costs for major projects increased approximately 44 percent over amounts estimated.

Project Planning and Design  
Costs Exceed Estimates

We compared estimates contained in expenditure authorizations to actual expenditures for the planning and/or design of 166 projects to determine whether the department was

delivering projects within estimates.\* Of the 166 projects, the estimated phase of work was completed for 82 projects (49 percent) and uncompleted for 84 (51 percent). To determine the total costs to complete the 84 incomplete projects, we used the department's PYPSCAN estimates of direct labor costs needed to complete the specific phase of work. Our analysis shows that planning and design costs for the 166 projects will exceed the expenditure authorization estimates by \$4.22 million, or 52 percent of the total that was estimated; 63 percent of the projects overspent their estimated amounts. Therefore, we estimate with 95 percent confidence that the department will spend at least \$136 million more than it had estimated for planning and design of the 3,913 projects we reviewed for fiscal year 1981-82. This \$136 million constitutes a cost overrun of 45 percent.

We also compared the department's PYPSCAN estimates to actual expenditures for planning and design.\*\* We found that actual planning and design costs for these 145 projects

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\* We had selected a random sample of 180 projects from the 3,913 projects with open expenditure authorizations, but we could not obtain sufficient information to analyze 14 of these projects.

\*\* Of the 180 projects we sampled, only 145 included PYPSCAN estimates; PYPSCAN estimates were not available for very old or small projects.

exceeded the estimates by \$2.7 million, a 39 percent overrun. Ninety-two of these 145 projects (63 percent) exceeded the PYPSCAN estimates.

We interviewed project engineers in four districts and project development and control staff at the department's headquarters office and found that the department does not monitor or control the planning and design costs of individual transportation projects. The department only exercises control over the various subcomponents of the highway program. The department does not use expenditure authorizations to control the planning and design costs of individual projects, nor does it compare actual project expenditures against PYPSCAN estimates. Consequently, the department lacks an adequate system to ensure that project development resources are effectively and efficiently used. Thus, overruns for individual projects potentially reduce the total number of projects that can be developed with the available funds.

#### Project Schedules Exceed Estimates

We compared actual project schedules to the original target dates on expenditure authorizations and to the milestone dates on the department's PYPSCAN system to determine whether projects were being delivered on time. On the average, projects encountered schedule delays of approximately nine

months when actual project schedules are compared to expenditure authorization target dates, and eight months when actual schedules are compared to PYPSCAN milestone dates. Table 3 on the next page shows the number of delays affecting major and minor projects in our sample. Major projects are those with capital costs exceeding \$200,000.

TABLE 3

DELAYS IN PROJECT SCHEDULES  
ACTUAL SCHEDULE COMPARED TO ESTIMATES

Length of Delay	Actual Schedule Compared to Expenditure Authorization Estimates				Actual Schedule Compared to PYPSCAN Estimates			
	Major Projects Delayed	Minor Projects Delayed	Total Projects	Percent	Major Projects Delayed	Minor Projects Delayed	Total Projects	Percent
No Delay	24	36	60	44%	37	39	76	54%
1-6 months	16	16	32	23%	10	12	22	15%
7-12 months	5	7	12	9%	7	5	12	9%
13-24 months	8	5	13	9%	5	13	18	13%
Over 24 months	10	11	21	15%	7	6	13	9%
Total	63	75	138	100%	66	75	141	100%

As the table shows, almost one-fourth of the projects were more than one year behind schedule for both the expenditure authorization and the PYPSCAN estimates. We found small differences between the delays for major projects and the delays for minor projects in our sample.

District engineers in charge of the projects we reviewed said that the primary reason for a project delay is the change in priority assigned to a project. A project that is originally given a high priority can become a low priority project and thus be dropped or set aside while other projects of higher priority are worked on. A project's priority can change because of an emergency situation, because of changes in the condition of the highway, or as described in Chapter I, because of fluctuations in the ranking procedures. For example, a new highway project in Sonoma County was listed in the 1979 STIP and was scheduled for construction in the 1981-82 fiscal year, but sustained planning work was not started until the summer of 1981. According to district engineers, the project was prematurely scheduled for 1981-82, and the target construction date had to be changed to the 1984-85 fiscal year. In addition, the project was first dropped from and then replaced on various draft and subsequent STIPs. As a result,

project development personnel in the district were unsure of the project's ultimate schedule or priority, they worked instead on projects they believed had a higher priority.

District engineers cited a number of other reasons why projects can be delayed. The absence of funding, unanticipated problems with the environmental review, or unexpected problems with the cities, counties, or local citizens interested in the project can all result in a change of schedule. Furthermore, lack of agreement on what is needed to solve the transportation problem and changes in design or scope can also delay projects.

One of the effects of project delays is increased capital costs, and major projects in our sample did show significant increases of capital costs. Current capital costs for major projects are approximately 44 percent higher than the original expenditure authorization estimates and approximately 79 percent higher than the original estimates on the districts' reports on the status of projects. Minor projects in our sample did not experience capital cost increases.

CONTROLS OVER THE  
EXPENDITURE AUTHORIZATION  
SYSTEM ARE WEAK

The department is not ensuring that expenditures are being properly charged to projects and that only departmentally authorized projects are being worked on. Because of weaknesses in the department's control over the expenditure authorization system, information collected on project development costs may not always be accurate. Consequently, the department may not be making the most efficient use of its resources.

Lack of Expenditure  
Authorization Controls

The department lacks adequate procedures and management controls for closing expenditure authorizations. When expenditure authorizations remain open, expenditures may be erroneously charged to a project, and there will be no accurate record showing where those expenditures should have been charged.

According to department manuals, expenditure authorizations for planning and design are to be closed 60 days after the award of the construction contract. However, the department has no clear policy indicating who is responsible for reviewing and closing inappropriately open expenditure authorizations. Of the 3,913 open expenditure authorizations



we reviewed, 1,183 (30 percent) were open more than 60 days after the award of the contract. Expenditures of approximately \$2.1 million were charged to 514 of these 1,183 open expenditure authorizations.

We interviewed project engineers for 16 projects whose project development expenditure authorizations were open for more than 60 days after the award of the contract. For 15 of these 16 projects, development expenditure authorizations should have been closed. The project engineers stated that they did not know why the expenditure authorizations were open and that project development work should not be charged against these expenditure authorizations.

In August 1981, for example, the department awarded a \$35.5 million contract for freeway and related structural work. The project development expenditure authorization was not closed 60 days after contract award, however, and expenditures of over \$25,000 were incurred for planning and design activities between November 1981 and June 1982. The project development engineer in charge of the project said that he did not know why the expenditure authorization was not closed and that he did not know what the charges were for.

In addition to those projects whose expenditure authorizations for planning and design were open after the award of the contract, we found 378 projects that had expenditure authorizations still open even though the construction had been completed. Charges to 182 of the 378 expenditure authorizations amounted to over \$541,000.

Furthermore, expenditure authorizations should also be closed promptly when work is no longer authorized to prevent other work and inappropriate expenditures from being charged to the open expenditure authorization. For example, a \$300,000 frontage road project was combined with several other projects for contract development purposes. However, the original expenditure authorization for this frontage road project was not closed. Subsequently, approximately \$17,850 was charged to this project over a period of 21 months after the expenditure authorization should have been closed. The project engineer for this project stated that the expenditure authorization should have been closed and that he did not know what the subsequent charges were for.

Finally, we found that the department's computerized expenditure authorization masterfile did not include all current award and/or contract completion dates. Of the 57 awarded and/or completed projects in our sample, the dates of award or completion for 9 (16 percent) were not in the project

masterfile. For example, the contract award date for one project in our sample was June 1977; the project was completed in July of 1977. Neither of these dates was in the masterfile. Therefore, closure of expenditure authorization is difficult when the information needed to do so is not complete.

#### Lack of Work Authorization Controls

The department is not exercising adequate control to ensure that only projects on the current list of authorized projects are being worked on. We cross-checked the capital scheduling plan against the expenditure authorization masterfile for major projects in the 1981-82 fiscal year and found that 523 (13 percent) of the 3,913 open expenditure authorizations were not on the capital scheduling plan. We found that 329 of the 523 major projects had expenditures for project development of approximately \$3 million for fiscal year 1981-82. According to department officials responsible for program management, the capital scheduling plan includes all authorized projects, whether on the STIP or not. Only projects on the capital scheduling plan are authorized for work, but the department does not cross-check its files to ensure that only authorized projects are being worked on.

We found one example of this problem occurring in Solano County. A freeway interchange on Route 80 was actively being worked on in fiscal year 1981-82, but the project was not on the department's capital scheduling plan and not on the 1980, 1981, or 1982 STIPs. The district is currently developing this \$1.5 million project. Expenditures for this project from July 1, 1981, to June 30, 1982, were more than \$35,000.

Another example of an active project that was not on the department's capital scheduling plan is a \$15.9 million bridge toll plaza relocation project. This project is not on any STIP and does not have an approved request for project authorization. As of June 1982, the project had incurred planning and design expenditures of over \$202,000.

The department's expenditure authorization system, as well as other available management information systems, provides relevant information that the department can use to exercise more effective control over development costs and project schedules. Without effective controls, actual costs for developing projects can greatly exceed the amounts estimated on expenditure authorizations and the amounts projected by PYPSCAN, and projects may not be delivered according to schedules. With better management control of

project development costs and schedules, the department should be able to produce more transportation projects with the resources available.

## CHAPTER IV

### CONCLUSIONS AND RECOMMENDATIONS

The overall effectiveness of the process for delivering highway improvement projects is affected by the efficiency of the planning and programming of projects in the STIP, by the Department of Transportation's environmental review process, and by the project development process. Deficiencies in all three of these areas have led to delays in project schedules and increases in project costs. Consequently, highway improvement projects are not being delivered as programmed, and the State's transportation problems are not being eliminated as quickly as they could be.

The current STIP is not a dependable work program because many projects are not being delivered as programmed. Approximately 30 percent of the over 1,200 projects we reviewed in the 1980 STIP either encountered schedule delays or were deleted from the program. At least 212 projects listed in the 1980 STIP have been delayed one or more years with associated increases in capital costs of over \$230 million. Similarly, 131 projects listed in the 1981 STIP have been delayed with cost increases over \$503 million. Furthermore, 180 projects listed in the 1980 STIP were deleted before the 1982 STIP was

prepared. There are numerous reasons for these schedule and cost changes, including deficiencies in planning, programming, and project development. A number of the reasons relate to the hurried annual STIP development cycle and the constrained five-year STIP period. These factors lead to inadequate initial definition of schedules and costs, resulting in changes when more information is gained from field study. In addition, the department's procedures for assigning priority to projects have resulted in schedule changes or in the deletion of some projects from the STIP. These problems and the resulting changes in project delivery dates and costs decrease the efficiency of both the programming of available funds and the development of projects.

Furthermore, the department has required time-consuming review and approval of environmental documents at department headquarters. Even though districts develop projects and conduct environmental studies in coordination with staff from headquarters, approximately 30 percent of the time involved in completing the environmental review process is spent in headquarters review and approval of environmental documents. As a result of its reviews, department headquarters sometimes requires districts to revise and resubmit interim documents, leading to additional delays while further review and approval takes place. Some of the authority for review and

approval could be delegated to certain qualified staff in the districts and from headquarters. (Subsequent to our review, the department has taken steps to delegate some of this authority to the districts.) Still other delays have occurred because all entities developing projects and conducting environmental studies, including cities and consultants, are not fully informed of the department's requirements at the outset.

Finally, the department is not exercising adequate control over the project development process to ensure that projects are completed within original schedules and within original cost estimates for project development. Almost 25 percent of the projects we reviewed in our project development sample were more than one year behind schedule. Furthermore, we project that \$136 million more than the amount estimated will be spent for planning and designing 3,913 transportation improvement projects. In addition, the department is not exercising adequate control to ensure that only projects on the current list of authorized projects are being worked on. We found 329 active major projects, with project development expenditures over \$3 million, that were not on the department's current list of authorized projects.



## RECOMMENDATIONS

To improve the dependability of the STIP and increase the efficiency of the programming of available funds, the California Transportation Commission and the State Department of Transportation should cooperatively establish a system that adequately estimates schedules and costs and identifies alternatives for projects before they are placed on the STIP. This system could be a simplified form of the department's present stage I work program, but the system should also do the following:

- Distinguish between projects that are in a study and estimation phase and those that are clear enough for a commitment of a specific amount of capital funds in a particular fiscal year;
- Establish a realistic range of acceptable alternatives to be studied for projects where the alternative cost estimates vary widely and where the preferred design is not yet clear; and
- Schedule specific projects subject to changing conditions, such as those in the Roadway Rehabilitation Program, for only the first two years of the STIP. Lump sums could be allocated to this program for later years, and specific projects could be adopted in a later STIP.

To unify the STIP as a planning document, the commission and the department should integrate the STIP and the AB 1176 list of projects requiring long lead time. If legislation is required to facilitate this process, the commission should propose the necessary modifications to the Legislature. In addition, the commission should propose a framework for a longer STIP period to provide adequate planning periods for major projects and long-range funding needs.

To eliminate the time-consuming layers of review and approval and thus improve the efficiency of the environmental review process, the Department of Transportation should undertake the following:

- Delegate authority for approving interim documents to district management and to district coordinators and reviewers from headquarters who are experienced and capable of ensuring that the project report and the draft environmental document meet statutory requirements and departmental policies;
- Establish procedures to inform consultants and local agencies fully of the requirements before project development outside the department begins; and

- Pursue the possibility of obtaining from the Federal Highway Administration authority for the State to approve environmental documents for federally funded projects.

Finally, to improve the management of project development, the department should do the following:

- Monitor and control the project development process for each project, not just for each program. Specifically, the department should monitor and control project development expenditures, schedules, and capital cost increases to minimize their effects on the department's project delivery system. Personnel responsible for project development should be held accountable for delivering projects within project development schedules and cost estimates;
- Minimize the changing of priorities and schedules for projects on the STIP, particularly after project development has begun, and improve the review of information before making any change to projects on the STIP. Also, modify the existing computer filing system to improve the identification and tracking of all projects on the STIP; and

- Ensure that unauthorized work is not taking place. The department should, for example, cross-check various accounting, program, and scheduling files to ensure that only appropriate expenditure authorizations are open and legitimately being charged. Also, the department should clarify and adhere to a policy for closing expenditure authorizations. This policy should identify the individuals responsible for such actions.

#### RECOMMENDATIONS TO THE LEGISLATURE

The Legislature should modify the present STIP requirements to accomplish the following:

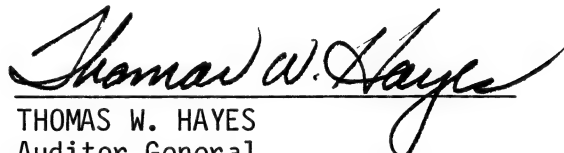
- Provide for a longer STIP period to encompass adequate planning periods for major projects and long-range funding needs. The planning period beyond the five years need not be funded, but the STIP should show the estimated amounts necessary to complete those projects that are in development as well as those major projects that are known to be required in the future, such as completing the interstate highway system. The commission, in

consultation with the department, should propose the framework and length of this additional planning period;

- Create a biennial STIP cycle by which the STIP is adopted every other year, and conduct the appeals process and make necessary adjustments for budget purposes only in the interim years of the two-year cycle. This will reduce current problems caused by the tight schedules, and it will provide a more stable program for budgetary purposes; and
- Encourage the department's district offices and the Regional Transportation Planning Agencies to cooperate when developing the districts' version of the proposed STIP and the Regional Transportation Improvement Programs.

We conducted this audit under the authority vested in the Auditor General by Section 10500 et seq. of the California Government Code and according to generally accepted government auditing standards. We limited our review to those areas specifically contained in the audit request.

Respectfully submitted,

  
THOMAS W. HAYES  
Auditor General

Date: March 28, 1983

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BUSINESS, TRANSPORTATION AND HOUSING AGENCY

STATE OF CALIFORNIA

OFFICE OF THE SECRETARY

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March 9, 1983

Mr. Thomas Hayes  
Auditor General  
925 'L' Street, Suite 750  
Sacramento, CA 95814

Dear Mr. Hayes:

The Business, Transportation and Housing Agency and the Department of Transportation have reviewed the draft copy of your report entitled "The State's System for Planning, Programming and Developing Highway Construction Projects Is Not Effective".

We generally concur with the report recommendations. Since the Administration change in January, the Department has been reviewing projects and policies to streamline the highway project planning and development process. The initial phase of this effort has been completed and a second phase review is nearing completion.

The first phase increased delegation of authority to the district directors, simplified report requirements and placed project development under a single district deputy. The second phase will address several of the other draft report recommendations.

Additionally, we are currently attempting to foster a cooperative relationship with the California Transportation Commission to minimize disagreements over the State Transportation Improvement Program (STIP).

I am concerned with two of the draft report conclusions. You conclude that there is inadequate management control of project development and that there are increased inflationary costs caused by project slippage.

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DEPARTMENTS OF THE AGENCY

ALCOHOLIC BEVERAGE CONTROL • BANKING • CORPORATIONS • CALIFORNIA HIGHWAY PATROL • ECONOMIC AND BUSINESS DEVELOPMENT  
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REAL ESTATE • SAVINGS AND LOAN • TEALE DATA CENTER • OFFICE OF TRAFFIC SAFETY

Management Control of Project Development

The "PYPSCAN" system is a relatively new computerized management process. This system projects information on person years, project schedules, and capital costs. We acknowledge that improvements to the system are needed, and we are continuing to refine the "PYPSCAN" process.

It should be understood that at the time of issuing expenditure authorizations estimates are made without the benefit of the scope or extent of the proposed project. This often results in engineering effort in excess of original plans.

Project Slippage

Your comments in regard to the slippage of specific projects related to the 1980 STIP -- we acknowledge that the 1980 STIP is an imperfect planning document because of unrealistic assumptions by the past Administration. While individual projects have slipped in schedule or have dropped, they have been replaced by advancing other projects. Projects whose costs have increased due to inflation and delays, have been in part balanced by the reduced cost of those projects which have been advanced.

Your draft report notes that the current Administration has taken steps which will improve the timeliness of project delivery. As mentioned earlier, we have already delegated environmental approval of project work programs to our district offices. We are now working with the Federal Highway Administration (FHWA) by having the reviews made in our district offices.

It is this Administration's intention to review and improve the Department's planning, programming, and delivery of projects to maximize construction with available federal and state revenues. We look forward to working with the California Transportation Commission, local and regional transportation planning agencies, and the State Legislature to implement improved procedures toward this end. Upon the issuance of your final report, we will prepare a detailed implementation plan to carry out its recommendations.

Should you have any questions, we will be happy to meet with you.

Sincerely,



KIRK WEST  
Secretary





## California Transportation Commission

1120 N STREET, P.O. BOX 1139  
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March 8, 1983

Mr. Thomas W. Hayes  
Auditor General  
State of California  
Office of the Auditor General  
660 J Street, Suite 300  
Sacramento, CA 95814

Dear Mr. Hayes:

The draft report of the Office of the Auditor General, "The State's System for Planning, Programming and Developing Highway Construction Projects Is Not Effective", is a thorough and noteworthy accomplishment. It achieves an analysis of the State's highway program that has long eluded legislators, local and regional agencies, as well as this Commission, because of the program's complexity. The task force of Auditor General's personnel has set forth a clear portrait of a program conducted inefficiently and without accountability. The literally hundreds of millions of dollars in estimated cost overruns and many years in project delays are disheartening. The work of the Auditor General's office in identifying these shortcomings is to be commended.

The draft report identifies a series of management reforms that can only be viewed as essential and overdue. The decentralization of the environmental review process, improved cooperation between Department district offices and local agencies, early identification of project alternatives, and improved internal management controls within the Department would all yield cost efficiencies, improve project delivery, and add accountability. The Commission is aware that the Department is currently initiating some of these reforms, and we lend our support to their efforts.

Along with its praise of the draft report, the Commission would like to comment on several matters that would further enhance the report.

### Purpose of STIP

The draft report does not bring into clear focus the full purpose and function of the State Transportation Improvement Program (STIP). The report casts the STIP document as "a firm schedule of projects over the five year span of programming"; "a document for scheduling construction"; and "a dependable document for allocating funds". The report concludes that the STIP has not

functioned well in this role by citing large percentages of projects whose delivery schedules and costs have been revised.

There unquestionably have been unnecessary project delays and cost overruns; these most assuredly must be curtailed. However, the report should acknowledge that adjustments in cost and scheduling are inherent in a five-year capital outlay programming exercise. Projects entering the STIP in the fifth year will come into sharper focus as they move forward in subsequent STIPs to the fourth year, the third year, and so on. Furthermore, cost adjustments will inevitably occur most frequently in periods of high inflation and economic instability as we have experienced in the past few years.

A five-year program will never have the precision of a one-year program, nor should it. An important purpose of the STIP is to allow for financial oversight. The annual adoption by the Commission of a five-year fund estimate helps to portray for the Legislature, the Administration, and local agencies the adequacy of State and Federal revenues and the available funding levels for individual program categories, such as maintenance, operations and rehabilitation as well as for specific new construction projects.

The draft report seems to overlook the crucial importance of the annual fund estimate. Rather than merely reviewing the Department's proposed fund estimate, the Commission adopts a fund estimate of its own, thereby establishing the financial ground rules for the development of the STIP. In each of the past three STIP cycles, considerable discussion preceded the fund estimate's adoption. The Commission made significant changes to the Department's proposed fund estimate; these changes have set the course for the ensuing policy of the Commission in its adopted STIPs.

By law, regional agencies and the Department must each conform to the Commission's adopted fund estimate in preparing their respective proposals for uncommitted funding in the new STIP. Thus, the fund estimate imposes a discipline on the STIP's development through its revenue constraints. Constrained revenues cause the prioritization of projects proposed by each agency competing for funds. Moreover, they provide a strong incentive for Caltrans and regional agencies to propose their most cost-effective project alternatives and to avoid "gold-plated pyramids".

The draft report seems to regard the STIP's competitiveness unfavorably. It characterizes the competition between regional agencies and the Department as "excessive" (p. 13); and it observes that total funding requested by the regions has always exceeded the amount in the Department's proposed STIP (p. 17). The explanation of the second point is quite simple: there are several dozen regional agencies competing for limited funds, each with its own set of priorities. By contrast, Caltrans, a single agency, is able to identify just one set of funding priorities for the entire State. This does not mean that regional agencies are overzealous or that Caltrans' priorities are somehow inherently correct. In fact, it is questionable whether there is any validity or meaning in adding up the sum of funding proposals requested by all the regions.

The annual STIP cycle is, by its very design, a competitive process. Prior to the STIP, the State highway program was carried out unilaterally by the Department with little accountability to legislators or regional agencies and even less participation by them. Under AB 402, regional agencies are assigned a more equal status in the STIP's development. The auditor's draft report does not provide due recognition of this fact or of the benefits arising from the annual competition for new revenues.

While the draft report is quite correct in regarding the STIP as a means of accountability to guide the Department's project development work, it should also recognize the STIP as a tool by which the Governor and Legislature can assess program priorities and the adequacy of transportation revenues. The STIP process also offers a forum outside of the Legislature to resolve competing priorities and perspectives between Caltrans and the state's localities and among its urban and rural areas. For the STIP to be able to function in all of these capacities, it must be afforded a degree of flexibility. The draft report should be revised to acknowledge all of these purposes of the STIP; to accurately describe the purpose and significance of the Commission's fund estimate; to clarify the role of regional agencies in the STIP's development; and to allow for some flexibility in the STIP to reflect the need for change in a long-term budgeting document.

#### Annual STIP Cycle

The report examines difficulties associated with the annual STIP development process (pgs. 13-23) due to "the hurried annual STIP development cycle". This examination concludes that if better estimates of a project's cost and scheduling were available prior to the STIP adoption, the cost and scheduling information within the STIP would be more accurate. The report then goes on to recommend to the Legislature a biennial STIP cycle (p. 77) as a means of achieving this objective.

It is difficult to fault the report's logic in examining the problem. Better "in-put" allows for better "out-put". However, the recommended means of achieving this improvement -- a biennial STIP -- is not totally consistent with the discussion contained in the body of the report. Early on, the report suggests that "if the STIP development cycle were modified to include a specified period for producing adequate project estimates and providing these estimates to the Commission, the STIP development process would be more effective" (p. 23). The report then suggests, somewhat tentatively, one of two approaches that might be used to do this: EITHER adopt a STIP biennially, OR encourage Caltrans district offices and the regional agencies to cooperate in preparing their respective STIP proposals. Yet the report's final chapter, without any further analysis or justification, makes a hard and fast recommendation to the Legislature for legislative action for a biennial STIP cycle (p. 77).

Experience drawn from the 1979, 1980, 1981, and 1982 STIPs has shown how radically circumstances can change from year to year. We believe these changes can be best addressed through an annual STIP cycle. In addition,

the present annual STIP provides an annual progress report which, in the past, has identified many of the significant delays this audit has documented.

Much would be sacrificed by opting for an every-other-year STIP. By replacing the annual STIP cycle with a biennial cycle, a governor would only have two opportunities during a term of office to recommend policy direction. The Legislature would have less opportunity to oversee the Department's project delivery conduct, to assess the adequacy of transportation revenues, and to recommend funding of specific projects. Members of the Commission, serving four-year terms, would have markedly less opportunity to establish program policy direction and advise the Legislature and the Secretary of Business, Transportation and Housing regarding legislative and administrative action. Regional agencies would be further removed from project development decisions and the Department's performance. By contrast, the Department of Transportation would have a much stronger ability to direct the transportation improvement program with reduced legislative, Commission, regional agencies, and public oversight and involvement.

In order to avoid these problems and keep the program open to public review, a biennial STIP cycle would have to include extensive updates in the off-year regarding revenue forecasts, inflation estimates, project costs, delivery and even revised priorities. When these updates are coupled with an appeals procedure, as suggested in the draft report, the distinction between the every-other-year STIP adoption and the off-year appeals process becomes blurred. In effect, an annual STIP cycle would remain, nominally called a "STIP adoption" in even-years and a "STIP update-and-appeals" in odd years -- seemingly a distinction without a difference.

The report does not specify how a STIP adoption every other year would enhance the Department's project cost and scheduling information. Better field information could benefit the STIP as a programming document. But there is no certainty that an every-other-year STIP would generate better field data; nor is it shown that the present annual STIP cycle precludes field information from being fully considered. It is the Department's information systems that need attention before the impact of the annual STIP cycle on program information can be judged.

We believe that a better approach to solving the current difficulties in meeting STIP deadlines is found in streamlining the annual adoption cycle and adjusting its dates. There are constructive reforms that could lessen the demands of the current annual STIP cycle, to the extent that these demands are troublesome. The number of sequential documents the Department must now produce could be simplified and reduced:

- The Department's proposal for the next STIP need not be a recasting of all five years of STIP projects reprinted from previous years; but rather, it could be limited both to new projects proposed for funding with new revenues and to proposed schedule and project cost adjustments on an exceptions basis; this document could be delayed from December until January or February;

- Documentation for all but the largest of rehabilitation projects could be limited to projects in the first two years of the STIP;
- The regional agencies' proposals for the next STIP could also be limited to new projects proposed for funding with new revenues;
- The documentation of the Commission's adopted STIP could be limited to those projects in contest between the regional agencies and the Department;
- The documentation of the Commission's resolution of appeals could be limited to those relatively few projects for which an appeal was granted and the corresponding projects chosen for deletion.

The effect of these changes in documentation would be to significantly reduce the volume of paper produced throughout the annual STIP cycle. These changes would reduce the workload demands on the Department, thereby permitting the Department more time for other tasks such as securing more accurate project cost and scheduling data for their STIP proposals.

Most importantly, these reforms would limit the production of a full five-year STIP document to just one a year: the updated version of the Commission's adopted STIP as the policy document of record, identifying projects already committed to, and therefore, projects of highest priority. It would remove any confusion regarding the status of the Department's proposed STIP, both in terms of the Department's on-going project development work and in terms of Legislators' and regional agencies' understanding of Commission policy and actions. These changes in documentation could well reduce the time demands identified by Caltrans personnel in the draft report (p. 16). And they would permit the benefits of an annual STIP adoption to continue.

Much of the reform of the STIP process is dependent upon the Department's willingness to acknowledge the Commission's adopted STIP as established policy and, in fact to accept the role and authority of the Commission and the regional agencies as set forth in AB 402. In the past, this has not occurred. With a new Administration, the atmosphere is improved for achieving this reform and for accepting the STIP process as legislative policy.

#### Beyond the Five Years of the STIP

The ability to look beyond the five years of the STIP has been an ongoing concern to the Commission. There are several reasons for this. First, some larger projects require more than five years to prepare for construction. Second, California's highway program has, for some time, not had a "shelf" of projects in waiting with which to pursue additional Federal funds. Third, by completing Stage I-type preliminary analyses of selected projects beyond the five years of the STIP, the Commission could better assess the merits of programming funds for these pre-STIP projects as they become eligible for inclusion in a future STIP.

The Legislature also has expressed its interest in looking beyond the five year horizon of the STIP. With AB 1176, it has directed the Commission to adopt a list of projects whose development requires more than five years. With SCR 46, it has directed the Commission to study and report on system improvements for safety, congestion, relief, and gap closure beyond those funded in the current STIP.

The Auditor's draft report calls for the provision of "a specified period for producing adequate project estimates" as a means of improving the certainty of cost and scheduling information contained in the adopted STIP. Extending the Commission's focus beyond the five years of the STIP is preferable to a biennial STIP cycle as a means of securing these improvements in project estimates. By expanding upon the concept of the "AB 1176 list", the Department would be authorized to perform preliminary project studies on specified projects nominated both by Caltrans and by regional agencies. It would be expected that the Department would report back on these studies in a timely manner, so as to permit the Commission to determine the priority for funding these proposed STIP candidate projects.

Care should be taken to assure that a longer range planning period be disciplined by limiting the number and total dollar value of projects under study beyond the fifth year. To do otherwise could result in fueling local expectations and spending excessive funds for developing projects that the State will not be able to afford.

#### Relative Benefits of the Report's Recommendations

The draft report does not assess the degree of benefit that can be expected from each of its recommendations. Such an assessment is important for laying out an overall strategy for reform. Not all of the recommendations can be expected to be equally beneficial. And some may be costly. Unless the relative benefit of each recommendation is estimated, the urgency for action cannot be judged. For example, if rehabilitation projects contained in the five-year STIP are specified only in the STIP's first two years and rehabilitation funding is "lump summed" in the STIP's last three years, the opportunity for project delays and cost overruns in the rehabilitation program will be greatly reduced because fewer cost and schedule estimates will be specified. If the Department curtails its repeated re-prioritizing of projects, delivery schedules contained in the STIP would be more closely adhered to.

The report would be enhanced by an assessment of its recommended reforms. The recommendation for a biennial STIP cycle, for example, might not be warranted if the report's various management reforms achieve a significant improvement in the Department's conduct of the highway program. The recent change in Administration brings the opportunity for new beginnings and hope for a willingness to explore managerial reforms that may have been overlooked or rejected in the past.

### The Commission's Role in the Environmental Process

The draft report is silent on the Commission's role in the environmental process. At present, once a project is programmed in the STIP by the Commission, the Commission does not re-enter the environmental process until after the Department has done all of the following:

- chosen between the preparation of an EIR or a Negative Declaration;
- prepared a draft document;
- conducted a public hearing;
- finalized the environmental document;
- selected a preferred alternative; and
- gained the concurrence of FHWA in the preferred alternative.

The Commission does receive monthly listings of the progress of environmental documents and a list of project alternatives to be looked at by the Department in an environmental document. However, it is fair to say that the Commission's involvement by the Department in the environmental process has been almost non-existent and essentially limited to an after-the-fact receipt of environmental documents and a preferred alternative.

The Commission does have a legal responsibility in the environmental process. With that responsibility comes the opportunity to assure adequate identification of alternatives in progress in the preparation of the EIR, community representation in the public environmental hearings and an appropriate designation of the preferred alternative. The past Department administration did not fully acknowledge the Commission's responsibility or the opportunity it presented. We are hopeful that the new administration will. Accordingly, the Commission recommends that procedures be established by the Department and the Commission to achieve the following:

- Full briefing for the Commission of all alternatives to be examined in an environmental document for major, significant projects, seeking Commission concurrence in the alternatives; this would establish an early, clear record of all alternatives to be studied;
- Report to the Commission on the public comments on the draft environmental document prior to the preparation of the final environmental document for major, significant projects; this would help assure recognition of community concerns by the Department;

- Concurrence between Caltrans and the Commission on the designation of the preferred alternative prior to submitting the environmental document to FHWA for approval; this would permit accord in state policy before seeking federal agreement.

One additional word of caution: the decentralization of the environmental process is a two edged sword - albeit a necessary and beneficial one. Decentralization will undoubtedly hasten the environmental process and project delivery. However, there must be adequate headquarters supervision as noted in the Auditor's draft report to assure that restraint is used in the selection of project alternatives.

#### Departmental Acceptance of the STIP as a Programming Document

Perhaps the most significant reform that the report does not speak to directly is a reform of attitude. The report notes repeatedly that the Department has not used the adopted STIP consistently as a commitment consistent with legislative mandate. The report cites work performed by the Department on unauthorized projects. The report observes frequent re-prioritizing of STIP projects by the Department irrespective of a project's status in current or past STIPs. The report refers to several Department officials responsible for developing the proposed STIP who stated that "they view the STIP as a 'reservoir of projects' for budgeting purposes, and not as a detailed schedule of projects to be delivered as programmed" (pp. 32-33). The report goes on to note that "because the STIP, by law, has been adopted as a means of coordinating highway planning throughout the State, projects that have been included in the STIP should be given special consideration before their priority or their schedules are changed."

It has been said that good intentions cannot be mandated. Yet, the Legislature has prescribed the STIP process; with that comes the expectation that it will be observed. As already noted, the past Caltrans administration did not accept in good faith the STIP process or the roles of the Commission or the regional agencies. The Auditor General's report clearly illustrates this fact. The occasion of a new administration presents an opportunity for a new cooperative effort.

We hope it won't be necessary for the Legislature to reaffirm and clarify its intent that the adopted STIP represents program policy.

To facilitate the Department's adherence to the adopted STIP, and promote its ability to estimate project cost and scheduling, the Commission suggests that the Department prepare annual or semi-annual variance reports. These informational reports would identify any significant changes in project cost or delivery schedule from that shown in the adopted STIP. Such reports



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would inform the Administration, the Legislature, local and regional agencies, as well as the Commission regarding the progress of specific projects.

We welcome the opportunity to comment on the Auditor General's draft report. The Commission pledges itself to work with all parties concerned to improve the STIP process, using this report as a reference and a guide.

Sincerely,

  
CLAUDE FERNANDEZ  
Chairman

cc: CTC Commissioners

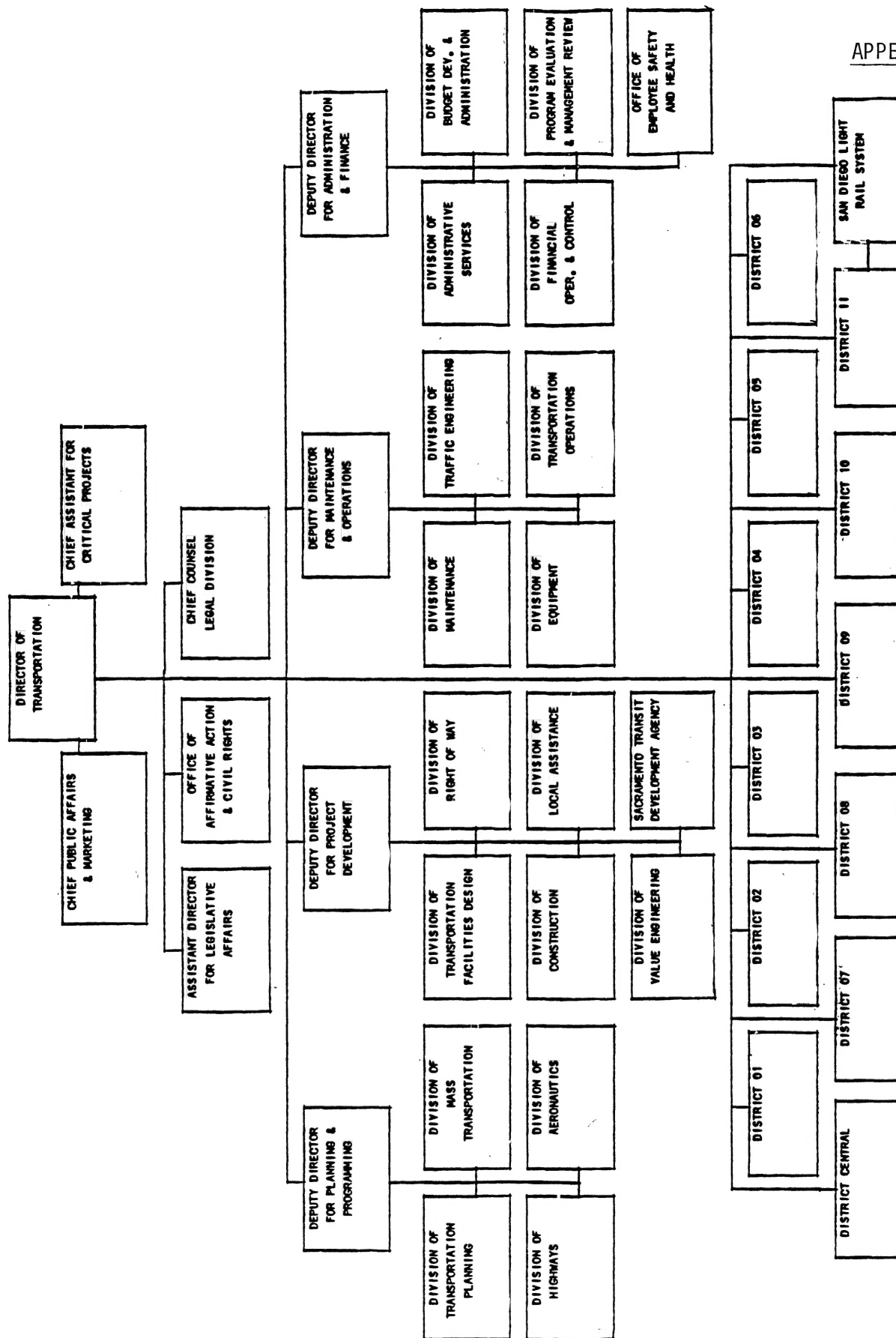
AUDITOR GENERAL'S COMMENTS ON THE  
CALIFORNIA TRANSPORTATION COMMISSION'S RESPONSE

We would like to offer some clarifying comments on the issues raised in the California Transportation Commission's response to our report.

1. The commission was concerned that we did not clearly explain the full purpose and function of the State Transportation Improvement Program (STIP). The commission believes that we need to acknowledge that it may be necessary to make adjustments to the STIP, that we minimized the commission's role in adopting fund estimates, and that we regarded the STIP's competitiveness unfavorably. On page 10 of the report, we recognize the need for flexibility by saying that modifying the STIP process will minimize changes in projects already on the STIP and thus improve the planning and programming of highway projects. To address the commission's concern regarding our presentation of its role in adopting fund estimates, we have inserted clarifying language on pages 3 and 15 of the report. Lastly, under the present system, regional agencies are competing for funds without having sufficient time to plan their project proposals adequately. As we show on page 13 of the report, placing inadequately planned projects into the STIP contributes to project delays.
2. The commission offered a viable alternative to our recommendation for a biennial STIP. However, we see little conceptual difference between our recommendation and the one offered by the commission. Both recommendations recognize the need to streamline the STIP process by eliminating the recasting of the entire five-year STIP every year.
3. The commission points out that we did not assess the degree of benefits expected from each of our recommendations. As we point out on page 8 of the report, causes for project delays are not mutually exclusive. Therefore, the degree to which a recommendation will be effective may depend largely on whether other deficiencies identified in the report are corrected. Our recommendations are aimed at making the overall project planning and programming process more effective.

4. The commission stated that the report was silent on the commission's involvement in the environmental review process. However, the commission recognizes that its involvement has been almost nonexistent. We emphasize that the commission needs to become involved in the environmental process; on page 73 of the report, we recommend that the commission and the department work cooperatively to develop a system that identifies project alternatives before the projects are placed in the STIP.

# ORGANIZATION CHART OF THE DEPARTMENT OF TRANSPORTATION



APPENDIX

cc: Members of the Legislature  
Office of the Governor  
Office of the Lieutenant Governor  
State Controller  
Legislative Analyst  
Director of Finance  
Assembly Office of Research  
Senate Office of Research  
Assembly Majority/Minority Consultants  
Senate Majority/Minority Consultants  
Capitol Press Corps